

Amendments to the Drawings:

The attached sheet of drawings includes new Figs. 6(c) and 6(d). This sheet, which includes Figs. 6(a)-(d), replaces the original sheet including Figs. 6(a)-(b).

Attachment: Replacement Sheet

REMARKS

Entry of the foregoing, reexamination and reconsideration of the subject matter identified in caption, as amended, in light of the remarks which follow, are respectfully requested.

As correctly noted in the Office Action Summary, claims 1-11 and 14-22 are pending in the application.

Applicant notes with appreciation the allowance of claims 1-10 and 14-22.

By the foregoing amendments, claim 11 has been revised to specify that "the waveguide is made of a material chosen from Si, GaAlAs, GaAs, silicon oxynitride and a doped glass," support for which can be found in paragraph [0090] of the specification. In addition, new Figures 6(c) and (d) have been added in response to the drawing objection. Support can be found at least in Figures 3(a), 6(a) and 6(b), and the specification in paragraphs [0065], [0140] and [0145]. The specification has been revised for consistency with the new drawings.

Turning now to the Official Action, the drawings stand objected to for the reasons set forth in section 6 of the Official Action. This objection has been obviated by the drawing amendments in the attached Replacement Sheet by which new Figures 6(c) and (d) have been presented to more clearly illustrate the features of claims 11 and 22. Accordingly, withdrawal of this objection is respectfully requested.

Claim 11 stands rejected under 35 U.S.C. §103(a) as being unpatentable over Sato et al (U.S. Patent No. 6,459,840). This rejection is respectfully traversed for the following reasons.

Claim 11 of the present invention sets forth an optical device comprising: a waveguide comprising an upper surface and a lower surface, the upper surface comprising a vertically tapered portion and a non-vertically tapered portion, wherein the waveguide is made of a material chosen from Si, GaAlAs, GaAs, silicon oxynitride and a doped glass; and a diffraction grating disposed on the upper surface at the non-vertically tapered portion, wherein the waveguide and the diffraction grating are made from a monolithic optical material, and wherein the monolithic optical material is over a substrate common to both the waveguide and the diffraction grating, the substrate disposed adjacent to the lower surface of the waveguide.

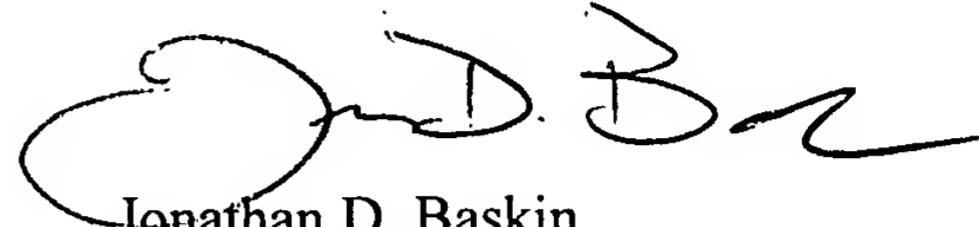
With reference to Figures 2a and 2b, Sato et al discloses an embedded laser device. After depositing an Si shadow mask over an n-type (100) InP semiconductor substrate 51, a laminated body 52, an n-InGaAsP optical waveguide layer 53 and an InP clad layer are formed on the substrate 51 by metal organic vapor phase epitaxy (MOVPE). The laminated body 52 includes: an n-InP buffer layer, an n-InGaAsP lower guide layer, a multiple quantum well active layer that consists of an InGaAsP (whose composition wavelength or band gap wavelength is 1.3 μ m) well layer having 1.1% compressive strain and an InGaAsP (whose composition wavelength or band gap wavelength is 1.05 μ m) barrier layer and that has six cycles, and an InGaAsP (whose composition growth rate is 1.05 μ m) optical waveguide layer. After the crystal growth process, a diffraction grating 54 is formed. Then, a p-InP clad layer 55 and a p-InGaAs layer 56 are formed by MOVPE. (Col. 6, line 46 to col. 7, line 2).

Sato et al does not disclose or suggest each feature of applicant's invention. For example, Sato et al does not disclose or fairly suggest an optical device as presently claimed which includes a waveguide made of a material chosen from Si, GaAlAs, GaAs, silicon oxynitride and a doped glass, as recited in claim 11. Sato et al is directed to a very specific device structure using particular materials. There is no suggestion in Sato et al that any material other than those described could or should be used with any expectation of success, let alone a waveguide made of a material chosen from Si, GaAlAs, GaAs, silicon oxynitride and a doped glass as presently claimed. Accordingly, withdrawal of the §103(a) rejection based on Sato et al is respectfully requested.

From the foregoing, further and favorable action in the form of a Notice of Allowance is believed to be next in order, and such action is earnestly solicited.

If there are any questions concerning this paper or the application in general, the Examiner is invited to telephone the undersigned at her earliest convenience.

Respectfully submitted,



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Date: March 6, 2006